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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 104

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PACT PROVIDES FOR FINLAND TO SEND NUCLEAR WASTE TO USSR

Helsinki HELSINGIN SANOMAT in Finnish 5 Jun 81 p 24

[Text] A definitive technical agreement was signed in Moscow on Thursday between the Imatran Voima (IVO) [Imatra Power Company] and Atomenergoexport on the return to the Soviet Union of fuel used by the Loviisa nuclear power plant. At the same time a preliminary agreement on a feasibility study for a 1,000-Mw nuclear power plant was also concluded.

According to the fuel agreement, the batch of fuel removed during the first nuclear fuel change at the number-one plant in Loviisa in 1978 will be shipped to the Soviet Union this fall.

The used fuel will be specially shipped in Soviet shipping containers. The IVO said that none of the radioactive waste containing nuclear fuel which is to be returned would be shipped back to Finland.

Following the first shipment, shipments consisting of approximately 14-ton lots of fuel at a time would take place once a year. That figure represents the amount of used fuel that has to be annually removed from one plant unit as well as the amount of new fuel needed.

Batches of fuel removed from the first reactors are stored at the Loviisa plant for about 3 years before being returned to the Soviet Union. In this way the fuel's level of radioactivity is substantially reduced. With regard to subsequent batches, it has been agreed to switch to 5-year storage.

The containers that guarantee protection against radiation used during shipment weigh about 80 tons apiece and they are designed in conformity with International Atomic Energy Agency recommendations. Shipments from Finland take place under the control and responsibility of IVO experts and under the supervision of Finnish officials.

An agreement was concluded on the preparation of a feasibility report for a 1,000-Mw Soviet nuclear power plant in mid-May in connection with Vice Premier Ivan Arhipov's visit to Finland. The report will have to do with Finland's energy policy program under which additional needs in terms of major power plant capacity by the end of the 1990's will be studied, with an eye to power plant decisions based on nuclear power, coal and peat. Work on the report is to be completed by the end of next year.

The decision on the 1,000-Mw Soviet nuclear power plant is based on the 1,000-Mw compressed-water reactor put into operation at the Novo-Voronesh number-five plant. This type of power plant plays a notable role in plans for the electrification of that part of the Soviet Union that lies within Europe and several of these plants are already under construction.

Aside from the decision on the Soviet plant, the IVO has concluded a similar agreement for a report on the feasibility of a 900-Mw French plant for Finland.

11,466

CSO: 5100/2269

BRIEFS

CANADA, PHILIPPINES SIGN AGREEMENT--The Philippines and Canada signed yesterday an agreement concerning the peaceful uses of nuclear energy. The agreement calls for Canada to make available to the Philippines a supply of nuclear reactor energy. The Philippines will want uranium and nuclear (?facilities) when its nuclear plant in Bataan becomes operational in 1985. Foreign Minister Carlos Romulo signed the pact for the Philippine Government, while Secretary of State for External Affairs Mark MacGuigan signed for Canada. [Text] [HK200046 Manila FEBC in English 2330 GMT 19 Jun 81]

BULGARIA SIGNS NUCLEAR CONVENTION--Vienna, 26 Jun (BTA)--Bulgaria joined the international convention for physical defence of nuclear materials. The signing of the convention took place in the Vienna International Center in the seat of the International Agency of Atomic Energy. On behalf of the People's Republic of Bulgaria the convention was signed by the Bulgarian ambassador to Austria and permanent representative at the international organizations in Vienna, Mr Stoyan Georgiev. [Sofia BTA in English 0840 GMT 25 Jun 81 AU]

CSO: 5100

AEC CHIEF TELLS NUCLEAR ENERGY PLANS, PROGRESS

New Delhi PATRIOT in English 7 Jun 81 p 5

[Text]

ATOMIC Energy Commission chairman H N Sethna today indicated that the country's nuclear energy programme would receive a big boost with the commissioning of a few fast breeder reactors by the end of this century using plutonium produced in the heavy water reactors as fuel.

The prototype 15 MW fast breeder reactor at Kalpakkam was nearing completion and the research centre there would develop the first reactor technology, Dr Sethna said.

Dr Sethna was speaking as chief guest at the inaugural session of a seminar on 'Conservation and use of alternative energy sources in industry' organised by the All-India Manufacturers' Organisation (AIMO) here.

Stating that nuclear energy could be considered as one of the alternative sources of energy, Dr Sethna said the 60,000 tonnes of uranium discovered so far would be sufficient to operate about 16,000 MW of installed power generating capacity for nearly three decades.

"In other words, the 60,000 tonnes of uranium used in heavy water reactors would be equivalent to about 1500 million tonnes of coal", he said.

About 3.5 kg of plutonium could be extracted from one tonne of uranium discharged from the heavy water plants and it could be used in the fast breeder reactors. This way, the 60,000 tonnes of uranium will ultimately yield energy equivalent to 75,000 million tonnes of coal", he added.

Dr Sethna said thorium could also be used advantageously in fast breeder reactors and the

360,000 tonnes of fuel available now would save about 450,000 million tonnes of coal.

Adequate infrastructure and indigenous capacity was being built up to achieve the target of setting up six new nuclear reactors during the sixth five year Plan and to start construction of larger units later, he said.

Dr Sethna said the Department of Atomic Energy was collaborating with the Government-owned Bharat Heavy Electricals Ltd (BHEL) and the Department of Science and Technology in developing magneto-hydro dynamics (MHD) which would substantially raise the efficiency of converting heat into electricity.

Dr Sethna said that in a country like India where availability of energy was one of the major constraints in the production of most of the industrial goods, the "scope for conservation may not be as significant" as in some of the industrially advanced countries.

He, however, noted that a certain degree of conservation could be and should be achieved by modernising the equipment and by proper maintenance of machinery to ensure proper use of available energy.

It was expected that by early next century, fusion reactors would begin to be the source of energy in large electricity generating plants and once that technology was developed, the fuel resources would be curtailed, he said.

On the alternative energy sources, Dr Sethna said solar energy had good potential to provide low temperature heat and it could be used to work agricultural pumps.

PTI INTERVIEWS ATOMIC ENERGY COMMISSION CHAIRMAN

New Delhi PATRIOT in English 12 Jun 81 p 5

[Text]

A US State Department team will arrive in New Delhi next month to continue discussions on the supply of enriched uranium for the Tarapur Nuclear Power Station. Dr H N Sethna Chairman of the Atomic Energy Commission disclosed here today.

He told PTI in an interview that so far there was no firm indication of the US Government acceding to India's request for the supply as per the co-operation agreement of 1963 between the two countries, and the 'stalemate' was continuing.

The fuel situation at the Tarapur plant continued to be difficult. An overdue consignment of 19.8 tonnes of enriched uranium applied for in August 1979 and scheduled for delivery between February and September 1980 had not yet been received from the USA. Another application for 19.8 tonnes of enriched uranium was made in September 1980 for delivery between March and September 1981.

The United States had been informed by the Government that continuing delays and uncertainties in supply of Tarapur fuel could not be accepted. The Government had also explained that it would not accept any conditions outside the framework of the existing Co-operation Agreement of 1963.

In the absence of the enriched uranium, Dr Sethna said 'mixed oxide fuel' would be used as an alternative. With the available plutonium at the plant, the station could be operated uninterrupted till 1989, he said. From then on, plutonium produced in other reactors at Kalpakkam in Tamilnadu and Narora in UP would be utilised at Tarapur he said.

Uranium was being exploited commercially in the Jaduguda area of Bihar where the reserves were of the order of 5,000 tonnes. Dr Sethna said two more projects for extracting uranium rich ore would be set up shortly in the Chhotanagpur plateau.

Dr Sethna said it was proposed to initiate construction of six more nuclear power reactors during the sixth plan. The next one would be in the western region and the Prime Minister Mrs Indira Gandhi would make the announcement regarding its location. It is reliably learnt that the plant would be set up in Gujarat.

LOK DAL LEADER OPPOSED TO NUCLEAR WEAPONS TESTING

New Delhi PATRIOT in English 3 Jun 81 p 4

[Text] At a time when crores of people are facing the worst drought in Rajasthan, Maharashtra, Karnataka and Tamilnadu, should India allow her national priorities to be distorted and go in for a nuclear explosion to build nuclear weapons. This poser came from Lok Dal leader George Fernandes to Mrs Indira Gandhi and her followers, who have mounted national orchestration in favour of going nuclear.

Mr Fernandes was speaking to newsmen at a meet the press function organised by the Bombay Union of Journalists.

He said that preparations are going on at Pokharan and nuclear explosion was quite on the cards. When millions of people were suffering in the drought conditions could India afford to fritter away her scarce resources on building nuclear weaponry he asked.

He alleged that Mr T. N. Kauf, Mr K. Subramanian and others at the instance of Mrs Gandhi have been carrying on constant orchestration and political parties like the BJP and the Janata have also joined the nuclear lobby to create war psychosis.

Mr Fernandes said that he was also opposed to India going nuclear even on moral grounds. Instead India should utilise her nuclear capabilities as lever for disarmament.

Mr Fernandes said that he found during his visit to Pakistan last year that Pakistani leaders from President Zia downwards were willing to have united research and other efforts for developing nuclear energy for peaceful purposes. They asked why India should doubt Pakistani intentions, when she had herself exploded nuclear device claiming that it was one for peaceful purposes.

Chavan

Mr Fernandes was happy Mr Y. B. Chavan was joining Congress-I as he said, Mr Chavan was incapable of functioning as an Opposition leader. He thought Mr Sharad Pawar also would join Mr Chavan a little later since he has been assured of the resurrection of the 'Indian National Congress' by 31 August.

However, Mr Fernandes was shocked at Mr Chavan's statement that people of India desired Nehru family to rule and said that this revealed that Mr Chavan lacked any democratic convictions.

While he did not see any emergency clouds, he said that Mrs Gandhi, had been ruling with informal emergency measures like censorship in Assam misuse of National Security Act against trade union leaders, etc. He also cited pressure on the press and said that no newspaper in Delhi carried any report of Mr Sharad Yadav's press conference or huge crowds drawn by Mr Charan Singh in the byelection campaign in Haryana and Uttar Pradesh.

CSO: 5100/7109

BRIEFS

AEC CHAIRMAN ON RADIATION PROTECTION--Bombay, June 2--Public exposure to radiation from the nuclear power industry has been much below the natural radiation level under which the people have been living, said Mr H. N. Sethna, chairman of the Atomic Energy Commission, here today. Inaugurating a symposium on "Environmental pollution," Mr. Sethna said the aim of radiation protection was to prevent detrimental effects, like cataracts and impairment of fertility. In spite of the very large quantities of hazardous radioactive substances generated and handled in the nuclear power programme, the safety measures had been so far adequate, he said. The setting up of an atomic energy regulatory authority to control the safety aspects of all atomic energy operations in the country was, however, under consideration. Mr Sethna said industrial and economic development and environmental improvement were the twin aspects of the solution to the problem of improving the quality of life. The principles and policies followed in the nuclear power industry had enabled it to establish itself in the country as the safest of all industrial and commercial activities while remaining commercially viable notwithstanding the environmental protection practices, he said. From the point of view of radioactivity, oil and coal-fired stations were ten and 1,000 times more potentially hazardous than a nuclear plant of similar capacity, he said. Most of the radioactivity in coal was in the ash that was disposed of from the thermal stations, he added. [Text] [Bombay THE TIMES OF INDIA in English 3 Jun 81 p 66]

CSO: 5100/7108

BRIEFS

URANIUM ENRICHMENT PLANTS--Tokyo, 13 Jun (KYODO)--Japan's three major heavy machinery makers--Mitsubishi Heavy Industries, Toshiba and Hitachi--have agreed to set up a joint firm for development and production of uranium enrichment plants in Japan. Some details, like the amount of investment they will share, still remain to be worked out, but informed sources said the joint venture appears certain to start operation early next year at the latest. The sources said the project was seen to help Japan's efforts to raise domestic production of enriched uranium, a source of energy for nuclear reactors. The Ministry of International Trade and Industry, welcoming the agreement, is likely to finance the project through the Japan Development Bank, they added. [Text] (Tokyo KYODO in English 0022 GMT 13 Jun 81 OW)

CSO: 5100

CEMA ENERGY, NUCLEAR POWER PROGRAM HIGHLIGHTED

Budapest MACYAR HIRLAP in Hungarian 23 Jun 81 p 7

[Text] During the Five-Year Plan just begun, the CEMA nations will pay special attention to integration and to national programs concerned with nuclear power. CEMA members accepted the long-term energy target program which deals in particular with the nuclear power industry and establishes the main development lines up to 1990 in 1978.

At present nuclear power accounts for 8 percent of the energy produced in the socialist countries; plans call for this to increase to 25 percent by the end of the decade: One-quarter of all electric power will be generated by nuclear power plants. (Long range plans project that the output of the "nuclear power sector" will approximate 50 percent by the turn of the century.) Under the terms of the 12-year program, the CEMA countries and Cuba, excluding the Soviet Union will put nuclear power plants having a total capacity of 37 million kilowatts into operation. The capacity of Soviet power plants will increase from the current 18 million to 90 million kws. The most dynamic development is expected from the nuclear power industry of the Soviet Union which produces 5 percent of the country's power at present. This percentage will quintuple by 1990. More than 25 nuclear power plants are now in operation in the USSR, and an additional 10 are under construction, primarily in the European parts of the nation. Most of the new plants will be built west of the Urals, because this is the most highly industrialized area of the Soviet Union, and its other energy sources are becoming depleted. Such concentrated siting will result in substantial savings because it will reduce use of natural gas and petroleum and eliminate the cost of building means of transportation over long distances.

Use of a new generation of nuclear power plants, a line of fast breeder reactors, will become widespread during this decade. Such energy saving reactors are already producing current at Sevchenko and Beloyarsk and most of the power centers now under construction will be of this type.

In the interest of updating the structure of energy consumption, the other CEMA countries are also accelerating their nuclear power programs. The energy program calls for reduction of the percentage of petroleum in the energy balance with a concurrent increase in the share of natural gas, coal and nuclear power. By 1990 Bulgaria will up the contribution of nuclear power plants to national energy production from the present 18 percent to 45 percent. By that time a nuclear power plant having a capacity of 9 million kw will be part of nuclear network of the country.

In Czechoslovakia, nuclear power plants will account for 40 percent of electric power production by the end of the decade. In the course of 10 years, Romania will establish a nuclear power capacity amounting to 6 million kw. Additional nuclear power plants are under construction in the GDR, and Cuba is entering the ranks of nations which have nuclear power plants.

Although construction of nuclear power plants is costly and time consuming, it pays in the long run because of the continuing depletion of traditional energy sources. Over the past decade the CEMA countries have carried out a number of joint investments in the energy and raw material extracting and processing sector. Construction of the 2,750-kilometer Orenburg gas line was a joint effort. And now, for the first time ever, joint nuclear power plant construction is in progress. Two nuclear power plants each having an output of 4,000 megawatts are being built in the Ukraine through the collaboration and investment of the Soviet Union, Czechoslovakia, Poland and Hungary. The first power plant will be completed in mid-decade at Hmelnytsky. Under the terms of the agreement, half the current generated at the two power plants will be exported by the Soviet Union to the countries which took part in the investment in amounts depending on their material contribution.

In line with the development of the nuclear sector as part of the integrated power system, the socialist countries are specializing in production of nuclear power plant equipment. Production of reactors in "large series" is primarily a Soviet assignment where the gigantic Atommas plant manufactures the "soul" of power plants. The Skoda machine industry association in Plzen, Czechoslovakia is the center for producing nuclear power machinery: reactor units are being made here. Bulgaria, Poland and Hungary are specializing in production of certain service installations such as water purification systems. The phase of the nuclear power program and the specialization arrangements agreed upon up to 1985 are based on VVER 440 type reactors. Beginning in 1985, the CEMA countries will gradually switch to production and export of the higher capacity VVER reactors and their equipment.

CSO: 5100/3018

BRAZIL

NAVY MINISTER SCORES PRESS OVER URANIUM SALE

PY271744 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 26 Jun 81 p 6

[Test] Brazilian Navy Minister Adm Maximiano da Fonseca yesterday in Sao Paulo accused the daily O ESTADO DE SAO PAULO of "being irresponsible and exceeding the boundaries of freedom of expression by making charges without any evidence to the effect that Brazil is supplying Iraq with uranium. Even if it were true, Brazil is a sovereign country and can sell uranium to whomever it wants and it is nobody's business."

Maximiano da Fonseca made his charges while explaining that the country should have an exceptional law, which in his opinion could be called the national security law or anything else, designed to "restrict certain abuses and lack of responsibility which take place around here."

When we asked him exactly where, the minister said: "Among the news media, where a certain newspaper is making terrible charges under huge headlines, besmirching all and sundry, without proving anything." The minister then went on to speak about O ESTADO's report about shipments of Brazilian uranium to Iraq.

According to Adm Maximiano da Fonseca, the foreign minister "has clearly and perfectly defined this uranium affair by explaining that Brazil has a nuclear accord with Iraq, an accord which is perfectly well known, and that selling uranium is no crime."

Maximiano da Fonseca believes that the reports recently released by O ESTADO are "proof of its lack of responsibility because there is no evidence. And even if it could be proven, the truth is that to sell uranium is no crime." He said that he does not understand the objective of all this display of news: "I do not understand all this uproar. Potentially, we have a great deal of uranium in Brazil and we will export such of it, to whomever may want it--whether to Iraq, France, China and Israel or anyone else has nothing to do with it. We will sell to anyone who may want it."

The admiral said that the news media "have the right to make accusations and prove them, but they cannot besmirch everyone through sensational headlines without proving anything. This is a lack of responsibility and exceeds the boundaries of freedom of expression."

Because of this, the minister said that there should be an exceptional law "to avoid certain things, certain abuses and lack of responsibility, just like in any democratic country in the world. No one wants to curb the broad freedom of expression which the press enjoys, but there must be responsibility." The navy minister held his interview yesterday at Congonhas Airport on his arrival from Brasilia to Sao Paulo where he will stay for 7 days.

CSO: 5100

BRIEFS

CLAIM URANIUM SHIPPED TO IRAQ--Paris--Two French physicists of the "Scientists' Group for Information on Nuclear Energy"--the Raymond and Monique Sene couple--were aware of the shipment of reactor-ready uranium to Iraq by Brazil a few months before the shipment was publicly denounced. In an exclusive interview with O ESTADO and JORNAL DE TARDE in College de France, the scientists said that they were informed about it by other scientists and technicians, some of whom work at the French Nuclear Energy Commission. The two scientists confirmed that the Brazilian uranium could have been irradiated in the Iraqi Osirak reactor (which was destroyed by Israel) to obtain plutonium 239. Raymond Sene was one of the authors of the report entitled "Osirak and the Proliferation of Atomic Weapons," which was recently submitted to President Francois Mitterrand. Monique Sene is head of research at the French Atomic Energy Commission, holds a degree in nuclear physics from the Paris VI University (Jussieu) and is head of the "Scientists' Group for Information on Nuclear Energy." In this interview they analyzed the implications of the shipment of uranium to Iraq. [Text] [PY251921 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 24 Jun 81 p 1]

FURTHER ON URANIUM SHIPMENT--Barrels of strategic minerals were transported from Sao Paulo to Sao Jose dos Campos on a big Scania truck belonging to a mineral transport company from Pocos de Caldas, over the period from 29 November 1980 to 15 January 1981. The 60-kilogram barrels were transported at the request of the National Nuclear Energy Commission (CNEN) from a CNEN warehouse on the Avenida das Nacoes Unidas in Sao Paulo. The truck unloaded the barrels "in a large warehouse" in Sao Jose dos Campos at a site known to the driver by the name of "aeronautica." According to a source connected with the transport company from Pocos de Caldas, the CNEN paid 250,000 cruzeiros for nine trips and "no receipts or invoices" were given. This transport company has been working for the CNEN and Nuclebras for 3 years, transporting strategic minerals. This was the first time that the company made trips from Sao Paulo to San Jose dos Campos. [Text] [PY261405 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 25 Jun 81 p 1]

CSO: 5100

GOVERNMENT TO PARTICIPATE IN URANIUM OPERATIONS

Salisbury THE HERALD in English 17 Jun 81 p 1

[Text]

THE GOVERNMENT will participate in all mining operations involving uranium, a spokesman for the Ministry of Mines said yesterday. He said the mining of any uranium discovered in Zimbabwe would be on a joint-venture basis with the Government. The announcement followed the granting of exclusive prospecting orders to four mining companies for the exploration and prospecting of minerals over a wide area of northern Zimbabwe.

The companies are Union Carbide Rhomet (Pvt.) Limited, Prospecting Ventures Limited, Coraya Consolidated Mines Limited and Saarberg Interplan Uran GmbH. They will prospect for uranium, cobalt, copper, molybdenum, tungsten, gold, lead, zinc, coal and other radioactive minerals.

The prospecting orders had been granted in accordance with the Government's policy of encouraging exploration by companies capable of finding minerals. It marks the intensification of the

search for uranium in Zimbabwe.

The spokesman said the main method of initial exploration would be with either wing aircraft or helicopters for radiometric survey. The orders had been granted for a short period initially, and if no potential prospecting sites were found, the companies would be required to release the areas once the flying programmes had been completed.

A notice in the latest Government Gazette states that in the event that the concession holder should discover uranium or other radioactive mineral deposits of economic value, mining operations shall be subject to State participation on a joint-venture basis.

"The specific terms and conditions of State participation shall be the subject of negotiations between the Government of Zimbabwe and the concession holder," said the notice.

The notice said the Government would retain the right to impose such obligations as were necessary to promote the mining of uranium and other radioactive minerals in the national interest.

The mining companies would be required to carry out prospecting operations in a manner satisfactory to the Minister of Mines, Mr Maurice Nyagumbo, which includes compliance with the specifications set by the Department of Geological Survey.

The prospecting orders had been granted against opposition from small miners. In a memorandum

of December 5, 1980, which was circulated to Ministers, Members of Parliament, Senators and all political parties in the country, the African Business Promotion Association, whose members include small miners, charged that some foreign companies controlled large tracts of land, some of which could be utilised by the small miners.

● The biggest hunt for uranium yet undertaken in Zimbabwe is being mounted by a West German company. An aerial survey of 34 000 km will take in the Zambezi Valley and probe 50 km southwards, reports our Bulawayo correspondent.

Saarberg Interplan Uran GmbH is sponsored in its Zimbabwe search by the West German Government.

Heading the search is Dr Claus Hemmer, at present based in Lusaka. He has made frequent visits to Salisbury to discuss the planned extension of the company's Zambian hunt for uranium into the Zimbabwe side of the Zambezi Valley.

Tom Deputy Secretary

for Mines. Mr Mike Harris, confirmed yesterday that the aerial search would start soon. "It must be a winter search because that is our dry season," he said.

CSO: 5100/4945

NEW NUCLEAR POWER PLANTS TO BE BUILT

Duesseldorf ATOMWIRTSCHAFT-ATOMTECHNIK in German Apr 81 pp 270-271

(Text)

(1) Neue Kernkraftwerke in der Bundesrepublik Deutschland

[illegible]

(17)

Prinzipalunterschied zu Strömungs-Flächen
nach dem des Abzuges sind (1A)

(19)

(20)

Kaufmann vertreibt seit 1970 seine Waren
überwiegend über Großhändler und Co.

(21)

(22)

Wegen der langen Verweigerung des Genehmigungsbescheides wurde die Planung von 570 MW Anlage auf nur 150 MW Anlage umgestellt. (23)

(24)

884) Bremen Bremen & Co AG
 885) Bremen Bremen Bank AG
 886) Bremer Vulkan Reederei GmbH
 887) Bremer Vulkan Reederei GmbH
 888) Bremer Vulkan Reederei GmbH
 889) Bremer Vulkan Reederei GmbH
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 898) Bremer Vulkan Reederei GmbH
 899) Bremer Vulkan Reederei GmbH
 900) Bremer Vulkan Reederei GmbH

Key:

- (1) New Nuclear Power Plants in the Federal Republic of Germany--Under Construction and in the Planning Stage (as of March 1981)
- (2) Consecutive number
- (3) Description
- (4) Owner or operator
- (5) Location
- (6) Electrical output in MW
- (7) Gross
- (8) Net
- (9) Reactor output MWth
- (10) Reactor type
- (11) Boiling water
- (12) Pressurized water
- (13) Public Utility Company of the City of Aachen 5 percent, Public Utility Company of the City of Bremen 5 percent
- (14) High-temperature gas-cooled pebble-bed
- (15) Sodium-cooled fast breeder
- (16) Public Utility Company of the City of Munich
- (17) Delivery to owner
- (18) Prototype, built with mainly public financing
- (19) Construction work suspended until spring of 1979 by court decree dated 20 October 1977
- (20) Following the construction suspension decreed 17 December 1976, the work was suspended until 6 February 1981
- (21) Construction work suspended since 19 February 1975 due to occupation of the site by opponents of nuclear power and court decree dated 14 March 1976
- (22) Dependent upon licensing procedure
- (23) Due to the long delay of the licensing procedure, the planning was revised from an 855-MWe plant to a 1300-MWe plant
- (24) Abbreviations
- (25) Project status
- (26) Placing of order (probable date)
- (27) Total plant
- (28) Reactor supplier
- (29) Start of construction (probable date)
- (30) Commissioning scheduled for:
- (31) At present
- (32) (When placing order)
- (33) Under construction
- (34) Construction permit
- (35) Mid-81
- (36) Late 85
- (37) Construction work suspended as of 10-20-77 until March 79 by court decree
- (38) B: Fall 1983
C: Summer 1984
- (39) Construction work suspended since 2-19-75 due to site occupation and court decree
- (40) May 1971

- (41) Order placed; TEG applied for 6-23-75
- (42) TEG applied for 8-17-78; planning order placed; firm order cannot be placed until receipt of enforceable TEG
- (43) (Licensing application on the basis of KWU Pressurized Water Nuclear Plant)
- (44) Order placed, TEG applied for 4-18-75, reapplied for 10-10-80 due to planning changes
- (45) Planning order placed, TEG applied for 6-23-75, reapplied for 11-27-80 due to planning changes
- (46) Letter of Intent 4-30-77; order placed; TEG applied for 6-16-77
- (47) Preliminary notification re site applied for 6-16-77
- (48) Offers received in early 1975, preliminary notification re site applied for 11-23-78, TEG applied for 11-29-74
- (49) Zoning procedure concluded December 1979, Letter of Intent placed 1-30-80, TEG applied for 2-13-79
- (50) Builder, KRL, established in October of 1975; zoning procedure applied for 10-8-76
- (51) Licensing applied for 9-11-74
- (52) Preplanning

Abbreviations:

BBC	Brown, Boveri & Cie Corp.
BBR	Brown Boveri Reaktor Ltd.
CEGB	Central Electricity Generating Board
EDF	Electricite de France
ESK	European Fast Breeder Nuclear Power Plants Ltd.
EVS	Swabia Power Supply Corporation
GKN	Neckar Association of Nuclear Power Plant Ltd.
HEW	Hamburg Electricity Works Corp.
HKG	High-Temperature Nuclear Power Plant Ltd.
HRB	High-Temperature Reactor Construction Ltd.
INB	International Sodium Breeder Reactor Construction Company Ltd.
KBG	Nuclear Power Plant Company Ltd.
KBR	Brokdorf Nuclear Power Plant Ltd.
KGB	Gundremmingen Nuclear Power Plants Ltd.
KGV	Gundremmingen Nuclear Power Plants Administration Ltd.
KKB	Brunsbuettel Nuclear Power Plant Ltd.
KKE	Emsland Nuclear Power Plant
KKH	Hamm Nuclear Power Plant
KKI	Isar Nuclear Power Plant Ltd.
KKK	Kruemmel Nuclear Power Plant Ltd.
KKP	Philippsburg Nuclear Power Plant Ltd.
KLE	Lippe-Ems Nuclear Power Plants Ltd.
KRB	RWE-Bayernwerk Nuclear Power Plant LTD.
KRL	RWE-LEW Nuclear Power Plant
KWG	Grohnde Association of Nuclear Power Plants Ltd.
KWS	Southern Nuclear Power Plant Ltd.
KWU	Kraftwerk Union Corp.
LEW	Lech Electricity Works Corp.
NWK	Northwest German Power Plants Corp.
OBAG	East Bavaria Power Supply Corp.
PW	Palatinate Works Corp.
RWE	Rhenish-Westphalian Electricity Works Corp.

RWE-PWGBR RWE-PW Civil-Law Association
SBK Fast Breeder Nuclear Power Plant Company Ltd.
SEP Cooperative Power Production Plants
SNR Sodium-Cooled Fast Breeder Reactor
TEG Partial Licensing
THTR High-Temperature Thorium Reactor
TWS Technical Works of the City of Stuttgart, Corp.
VEW United Electricity Works, Westphalia, Corp.

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BRIEFS

LOVIISA NUCLEAR FUEL SITUATION—Loviisa (HS)—The Loviisa nuclear power plants now have enough new nuclear fuel stored for 2 years. The last shipment of fuel arrived last weekend. So each plant has enough for two fuelings. The Imatran Voima's [Imatra Power Company] new fuel storage facility is filled to overflowing. Last year's interruptions delayed plant operation to such an extent that the next fuel change will not be until the end of the year. Under normal circumstances the annual servicing and fuel change would have been scheduled for this summer, when electricity needs are less than during the winter. There are now 56 tons of fuel in storage. According to the fuel-cost calculations that have been presented, the stored fuel is worth about 240 million marks. In terms of the amount of energy involved, this is the equivalent of 5 million tons of coal. The Teollisuuden Voima's (Industrial Power Company) Olkiluoto plant intends to store enough for at least one fueling for each plant. At the moment, the TVO's number-one plant has that one load, or about 25 tons of new nuclear fuel, in storage. The TVO's number-two plant is still waiting for its own stock. At Imatran Voima a plentiful supply is regarded as a good thing. "In connection with shipments of nuclear fuel, there is no cause for concern as to suspensions of shipments," operations chief Anders Palmgren maintains. "Nevertheless, we wanted to operate in this field in accordance with the principle of a reliable supply since it is so easy to be able to do so. Then too, this sort of early supply fits in very well with our Soviet fuel supplier's production program," Palmgren said. The fuel arrives at the Loviisa plants in the form of components from the Soviet Union. They come by rail to the station at Loviisa and are transferred by highway transport to Hastholmen. For shipment the nuclear fuel is packed into special containers which comply with International Atomic Energy Agency recommendations. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 2 Jun 81 p 8] 11466

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FRANCE

EFFECTS OF CHANGE IN NUCLEAR CONSTRUCTION POLICY VIEWED

Paris L'USINE NOUVELLE in French 4 Jun 81 pp 64-65

[Article by Claude Goudier]

[Text] As was to be expected, the new administration has halted construction of the Plogoff power plant. Francois Mitterrand had promised to do so.

Aside from eventually worsening the endemic shortage of electricity in Brittany, this decision will, for the moment, have no repercussions on the nuclear industry, for no firm order had been placed by EDF [French Electric Power Company]. Only a good part of the land had been acquired and the site preparation crews were getting ready to begin work there.

This is by no means a 180° turn that the administration is taking. Work on the 40 units begun since 1970 (32 units of 900 MW and eight of 1,300 MW) is continuing. There are 16 900-MW units already in service and the others are well underway. This program is now nearing completion.

But future plants could be endangered, for Francois Mitterrand had pledged that, if elected, "he would limit the nuclear program to plants now under construction until the nation, when fully informed, could make a decision."

So the "Plogoff effect" does concern the industries involved in the nuclear program as well as EDF, as a freeze imposed on the other projects chosen by the previous government could have disastrous consequences for the workload of their plants and, above all, for their jobs.

Five sites, or 10 1,300-MW units, whose construction is now planned, would be endangered. These are: Belleville, Nogent-sur-Seine, Golfech, Penly, and Chooz. The decision to be made by the government is a vital one, as it will affect an industrial strategy with highly complex workings. Furthermore, the new national leaders are

very well aware that a machine like the nuclear industry can not be halted as easily as Plogoff could be stopped!

The construction of a power plant is a long-term project, lasting about 7 years. Therefore, as soon as EDF gets the DUP [Statement of Public Utility]--to some extent the go-ahead signal--it starts major site preparation work even before completing all the numerous formalities. This site work sometimes begins 2 years before the civil engineering, and is allocated special funding by the government. So, even before the real work begins, this is a pledge for the security of the foundations of the plant. This gives the civil engineering firms time to hire local labor and to train these employees. This is the point in construction when the possibility of local hiring is at its peak. So a fleet of earth-moving equipment has been at work for several months now at the sites of Nogent, Belleville, Penly, and Golfech. A special bridge for heavy equipment access has even been built at Belleville.

While this preparatory work is being done, EDF, starting from the date scheduled for connection to the national power grid, begins a long countdown, starting with an "anticipated notification" to industries which manufacture the boiler and the turbo-alternator system, which are given firm orders. These industries then place their orders with forging industries so they will be ready to make very heavy parts for the plant. Then, following a very rigorous planning schedule, EDF gives these industries an "execution order," which starts the manufacture of time-consuming items. It takes nearly 40 months to complete a tank weighing 410 tons, 36 months for a steam generator, 48 months for the turbo-alternator system, etc.

The boilers, the generator, and the civil engineering are three irreversible contracts. The civil engineering work has just begun at the Belleville site, and an execution order has been given for the first of the two boilers. Sources in the equipment division of EDF say that, strictly speaking, the sites of Golfech, Belleville, Nogent, and Penly have been opened. This is also the opinion of the state comptroller.

But the political authorities may not take the same view of this situation and may not consider these units already started. In this case the consequences would be severe for EDF, which has begun the site preparation work, as well as for large firms, public works enterprises, and hundreds of subcontractors, both large and small. Some of these subcontractors, PME [Small and Medium-Size Businesses] with a staff of only 100 people, live only from their nuclear work. Over 1,000 firms are involved in the construction of one nuclear unit. The present program today employs, both directly and indirectly, over 120,000 workers. One nuclear unit means nearly 25 million manhours of work in a factory!

Contracts for One Nuclear Unit

	Number of contracts	Percentage of total cost	Subcontracted items (in per- centage of total cost)
Nuclear boiler	1	39	30 to 33
Turbo-alternator system	1	18	9
Civil engineering, ventila- tion, handling equipment	180	18	9
Electricity	80	7	3.5
Conventional mechanical work and nuclear work other than boiler and turbo- alternator	140	12	6
Miscellaneous (approximate number)	800	6	1
Total	1,200	100	60

Source of data: L'USINE NOUVELLE.

At Framatome, which has 4,800 employees, it is expected that if the sites listed earlier are canceled, sites to which two boilers for Cattenom should be added, for the options for these boilers have not been taken up by EDF, at the order of the state comptroller, job levels could not be maintained at the current level. It is expected that 6 months after halting the programs, 300 jobs in the force would have to be eliminated, along with 400 jobs in the foundry, 200 in steel, 150 in tank machining, and 100 jobs in the steam generator section. This comes to a total job loss for Le Creusot of 1,150 jobs. To these cuts would have to be added 350 jobs lost from the Chalon-sur-Saone plant, a town where Pierre Joxe is deputy mayor, and 200 from company headquarters. Effects on the subcontractors would be felt even more quickly.

If the program is just slowed down, personnel levels will still have to be cut gradually. If the program is halted for 1 year, that would affect, at Alsthom-Atlantique, the manufacture of four 1,300-MW turbo-alternator systems. That would mean that 9 months after shutdown, 200 jobs would be cut; 15 months afterward, 400 jobs; 21 months afterward, 1,200 jobs; and 27 months afterward, 2,400 jobs. The Belfort plant would lose 80 percent of its jobs and the Le Bourget plant (alternator work) would lose 20 percent. These figures have to be multiplied by 2 if we include related equipment.

A replacement order for a conventional thermal unit would be of no use, said Alstom. For, considering the time required for studies and for ordering the raw materials needed, 2 years have to elapse before the first hour spent in manufacturing.

Another consequence of this possible shutdown of the nuclear industry is a deficit of 25 million TEP [Tons of Petroleum Equivalent] by 1990, in relation to earlier forecasts.

7679

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COGEMA REPROCESSING PLANTS AUTHORIZED AT LA HAGUE

Paris LE MONDE in French 19 May 81 p 28

[Report; commentary on socialist policy by J.-F. A.]

[Text] By virtue of a decree published in the JOURNAL OFFICIEL of 16 May, the General Nuclear Materials Company (COGEMA) has just been authorized to set up in La Hague (Manche) new facilities for the reprocessing of radiated fuel from nuclear powerplants. COGEMA, a subsidiary of the Atomic Energy Commission (AEC), is soon to begin construction of the following three facilities:

- 1) a reprocessing plant, called the UP-2-800, at which personnel from the La Hague center will, using the radiated fuel they receive, separate the "wheat" (uranium and plutonium) from the "chaff" (radioactive waste). This new unit, which will have a capacity of 800 tons a year, is actually a far-reaching restructuring of the reprocessing shop now in operation. Claude Frejacques, who at the time was on the AEC, stated that investments made at the time the plant was built were underestimated. The plant, designed to handle¹ 400 tons of fuel from the light-water and enriched uranium plants, can actually take care of no more than 250 tons. To date, 320 tons of fuel of this type have been reprocessed at La Hague.
- 2) a second reprocessing plant (UP-3-A), with a capacity of 800 tons a year also, which, according to COGEMA plans, could be followed much later by an identical unit (UP-3-B) with an identical capacity; and
- 3) a new processing plant (STE-3) that will receive and purify liquid waste produced by the La Hague plant so as to separate leftover radioactive materials that are kept and stored from elements whose disposal does not affect the environment.

This entire program, whose cost is now estimated at some 20 billion francs, should lead to tests around 1986 for the UP-2-800, which should be entirely devoted to meeting the needs of the French Electric (Power) Company. The second plant, UP-3-A, which should reprocess the some 6,000 tons of foreign radiated fuel (LE MONDE, 6 February 1980) for which COGEMA has entered into lucrative

¹ In addition to fuel from the light water plants, the La Hague plant also reprocesses graphite-gas fuels. This second activity should soon be transferred to the nuclear powerplant in Marcoule, in Gard.

contracts, should operate a little later in such a way that by the end of the decade, La Hague will have a capacity of 1,600 tons a year.

Commentary

The decrees authorizing the expansion of the La Hague plant, whose publication comes very late in the 7-year term of Valéry Giscard d'Estaing, bind the future government, to a certain extent, with respect to reprocessing problems. What will be the consequences of this affair? For the time being, one is reduced to conjecture, although in its report on energy, "The Other Policy," the Socialist Party states: "Our choice not to commit ourselves to the development of breeder reactors does not force us into reprocessing and we are therefore justified in wondering which is the best of the two paths. In order to clarify this choice between the storage of radiated fuel and the storage of waste, research into the path of nonreprocessing must be undertaken in France and at the European level. With respect to the current reprocessing plant, whose operating conditions are poor, it must be replaced by a facility whose essential conditions would no longer be the production of fuel, but maximum protection of the workers and the environment."

Will the members of the future government be ready to do without the 30 billion francs, part of the sum in foreign exchange, which the reprocessing services represent in the 1980's? Will they also draw a line through the technological progress acquired for technological processes whose "feasibility," as the CFTD [French Democratic Confederation of Labor] notes, "is demonstrated, even if their industrialization is not yet"? The debate is now open.

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